SKILLS CHECK

The point A and B have position vectors $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$ and $\begin{bmatrix} -3 \\ 11 \end{bmatrix}$ respectively. M is the midpoint of the line joining A and B. Find $|\overrightarrow{BM}|$

Find the gradient of the tangent to the curve $y = x^3 - 2x^2 + 2x - 1$ at the point (-1,-6)

Sketch the graph of $y = x^2 - 9$

The graph of $y = x^3$ is translated by vector $\begin{bmatrix} -1 \\ 2 \end{bmatrix}$ find the equation of the resulting graph in the form $y = x^3 + ax^2 + bx + c$

Find the centre and radius of the circle given by $x^2 + y^2 - 6x - 4y - 23 = 0$

WEEK 1

SKILLS CHECK

Given that A has position vector 3**i** – 2**j** and b has position vector 6**i** + 10**j** find $|\overrightarrow{AB}|$

Find the coordinates of the stationary points of the curve $y = 2x^3 - 24x$

Sketch the graph of $y = x^2 - 3x - 10$

The graph of $y = x^2 - 2x$ is stretched by scale factor ½ parallel to the x-axis.
Find the equation of the resulting graph

A circle with centre (-1,3) has a radius of 5. Find the points where the circle intersects the x-axis.

WEEK 2

SKILLS CHECK

The angle between the vector **i** and the vector a**i** + $3\sqrt{2}$**j** is 30°. Find the value of a

Find the gradient of the tangent to the curve
$y = \frac{1}{2}x^2 + \frac{1}{6}x^3 - \frac{1}{4}x$ at the point where x = $\frac{1}{2}$

Sketch the graph of $y = 4x + 12 - x^2$

The graph of $y = x^3 + 2x^2 - x + 3$ is reflected in the y-axis.
Find the equation of the resulting graph

The circle with centre (0,0) and radius 5 intersects the line x + y = 1. Find the coordinates of the points of intersection.

SKILLS CHECK

Write down a vector parallel to the vector $\begin{bmatrix} 3 \\ -4 \end{bmatrix}$ with magnitude 20

Find the gradient of the tangent to the curve
$y = \frac{3}{2}x^2 + \frac{5}{6}x^3 - \frac{5}{4}x$ at the point where x = -1

Sketch the graph of $y = 2x^2 - 32$

The point (-1,2) lies on the graph of y = f(x). State the coordinates of its image when the graph is transformed to y = 2f(x)

Points A (-1,2) and B(3,5) are end points of a radius of a circle. The x-axis is a tangent to the circle. Find the equation of the circle.

SKILLS CHECK

A and B have position vectors $\begin{bmatrix} -1 \\ 2 \end{bmatrix}$ and $\begin{bmatrix} 3 \\ 4 \end{bmatrix}$ respectively. Calculate the angle between $\overrightarrow{AB}$ and **i**

Find the x-coordinates of the stationary points of the curve
$y = 5x^3 - 2x^2 - 3x + 10$

Sketch the graph of $y = 2x^2 - 7x$

The point (6,-10) lies on the graph of y = f(x). State the coordinates of its image when the graph is transformed to y = f(2x)

A (7,-1) and B(-1,5) are end points of a diameter of a circle. Find the points where the circle intersects the y – axis.

WEEK 5

SKILLS CHECK

QUESTION 1

A, B and C have coordinates (2,5) (6, -3) and (-1, 4). M is the midpoint of the line joining A and B . Find the vector $\overrightarrow{CM}$

QUESTION 2

Find the equation of the tangent to the curve $y = 5 - 10x + x^3$ at the point when x = -1

QUESTION 3

Sketch the graph of $y = 2x^2 + x - 6$

QUESTION 4

The point (-1,4) lies on the graph of y = f(x). State the coordinates of its image when the graph is transformed to y = f(x-1) + 3

QUESTION 5

Find the equation of the tangent to the $x^2 + y^2 - 4x + 2y - 8 = 0$ at the point (0, 2)

WEEK 6

SKILLS CHECK

Given that $p \begin{bmatrix} 1 \\ 3 \end{bmatrix} + q \begin{bmatrix} 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 5 \\ 5 \end{bmatrix}$ find the values of p and q

Find the values of x for which the tangents to the curve
$y = 3x^3 + 6x^2 - 2x + 5$ are parallel to the graph y - 3x = 2

Sketch the graph of $y = 3x^2 - 12x + 12$

The point (-5,-2) lies on the graph of y = f(x). State the coordinates of its image when the graph is transformed to y = f(x+5) + 2

Find the equation of the tangent to the circle $x^2 + y^2 - 2x - 2y - 23 = 0$ at the point (5,4)

WEEK 7